

THE ASTROPHYSICAL JOURNAL
CONTENTS OF VOLUME 322, PART 1

1987 NOVEMBER 1, Number 1

| | Page | Fiche |
|--|------|---------|
| COSMIC STRING WAKES <i>Albert Stebbins, Shoba Veeraraghavan, Robert Brandenberger, Joseph Silk, and Neil Turok</i> | 1 | 138-A7 |
| THE ORIGIN OF THE DIFFUSE X-RAY BACKGROUND AND THE FORMATION OF GALAXIES AND VOIDS <i>Ruth A. Daly</i> | 20 | 138-B12 |
| THE SELF-SIMILAR COSMOLOGICAL PARADIGM: A NEW TEST AND TWO NEW PREDICTIONS <i>Robert L. Oldershaw</i> | 34 | 138-C12 |
| COSMOLOGICAL PARAMETERS FROM THE <i>IRAS</i> GALAXY SAMPLE <i>Jens Verner Villumsen and Michael A. Strauss</i> | 37 | 138-D1 |
| COMPARISONS OF THE SPATIAL DISTRIBUTION OF ABELL CLUSTERS AGAINST MODELS WITH GAUSSIAN INITIAL CONDITIONS <i>David J. Batuski, Adrian L. Melott, and Jack O. Burns</i> | 48 | 138-D12 |
| THE VERTICAL STRUCTURE OF GALACTIC DISKS <i>R. G. Carlberg</i> | 59 | 138-E9 |
| MOLECULES IN GALAXIES. V. CO OBSERVATIONS OF FLOCCULENT AND GRAND DESIGN SPIRALS <i>Antony A. Stark, Bruce G. Elmegreen, and Don Chance</i> | 64 | 138-F1 |
| VLBI STRUCTURE OF 3C 84 AT 89 GHz <i>D. C. Backer, M. C. H. Wright, R. L. Plambeck, J. E. Carlstrom, C. R. Masson, A. T. Moffet, A. C. S. Readhead, D. Woody, A. E. E. Rogers, J. M. Moran, C. R. Predmore, and R. L. Dickman</i> | 74 | 138-F11 |
| X-RAY OBSERVATIONS OF THE SUPERNOVA REMNANT N103B IN THE LARGE MAGELLANIC CLOUD <i>K. P. Singh, N. J. Westergaard, H. W. Schnopper, and D. J. Helfand</i> | 80 | 138-G3 |
| ARECIBO OBSERVATIONS OF <i>IRAS</i> GALAXIES AT 21 CENTIMETERS AND 18 CENTIMETERS <i>Robert W. Garwood, George Helou, and John M. Dickey</i> | 88 | 138-G11 |
| LARGE-SCALE GALACTIC DUST MORPHOLOGY AND PHYSICAL CONDITIONS FROM <i>IRAS</i> OBSERVATIONS <i>T. J. Sodroski, E. Dwek, M. G. Hauser, and F. J. Kerr</i> | 101 | 139-A10 |
| GLOBULAR CLUSTER EVOLUTION IN THE GALAXY: A GLOBAL VIEW <i>David F. Chernoff and Stuart L. Shapiro</i> | 113 | 139-B9 |
| THE EVOLUTION AND FINAL DISINTEGRATION OF SPHERICAL STELLAR SYSTEMS IN A STEADY GALACTIC TIDAL FIELD <i>Hyung Mok Lee and Jeremiah P. Ostriker</i> | 123 | 139-C6 |
| FOURIER COEFFICIENTS OF THE RR LYRAE VARIABLES IN NGC 6171 <i>R. F. Stellingwerf and R. J. Dickens</i> | 133 | 139-D2 |
| ABSORPTION IN THE WIDE QSO PAIR TOLOLO 1037--2704 AND TOLOLO 1038--2712: EVIDENCE FOR A SPECIALLY ALIGNED SUPERCLUSTER AT $z = 2?$ <i>Wallace L. W. Sargent and Charles C. Steidel</i> | 142 | 139-D11 |
| EMISSION-LINE VARIABILITY AND THE BROAD-LINE REGION OF QUASI-STELLAR OBJECTS. I. TIME SCALES AND PHOTON DENSITIES <i>Wei Zheng, E. Margaret Burbidge, Harding E. Smith, Ross D. Cohen, and Steven E. Bradley</i> | 164 | 139-F5 |
| NEW CONSIDERATIONS ON THE BROAD-LINE REGIONS OF QUASARS <i>J. H. You and F. H. Cheng</i> | 174 | 139-G2 |
| THE EFFECT OF A QUASI-STELLAR OBJECT ON ITS HOST GALAXY: DYNAMICAL AND PHYSICAL PROCESSES IN THE INTERSTELLAR MEDIUM AROUND A QUASI-STELLAR OBJECT <i>C. A. Chang, A. V. R. Schiano, and A. M. Wolfe</i> | 180 | 139-G8 |
| CONVECTION IN SUPERNOVA THEORY <i>H. A. Bethe, G. E. Brown, and J. Cooperstein</i> | 201 | 140-B3 |
| EVOLUTION OF 8-10 M_{\odot} STARS TOWARD ELECTRON CAPTURE SUPERNOVAE. II. COLLAPSE OF AN O + Ne + Mg CORE <i>Ken'ichi Nomoto</i> | 206 | 140-B8 |
| PROSPECTS FOR GAMMA-RAY LINE OBSERVATIONS OF INDIVIDUAL SUPERNOVAE <i>Neil Gehrels, Marvin Leventhal, and Crawford J. MacCallum</i> | 215 | 140-C3 |
| WAVE ENERGY IN WHITE DWARF ATMOSPHERES. I. MAGNETOHYDRODYNAMIC ENERGY SPECTRA FOR HOMOGENEOUS DB AND LAYERED DA STARS <i>Zdzislaw E. Musielak</i> | 234 | 140-D8 |

| | Page | Fiche |
|---|---|-------------|
| THE SCATTERING OF ALFVÉN WAVES BY DENSITY FLUCTUATIONS | <i>He-Sheng Li and Ellen G. Zweibel</i> | 248 140-E8 |
| PARTICLE ACCELERATION AT SHOCKS: A MONTE CARLO METHOD | <i>J. G. Kirk and P. Schneider</i> | 256 140-F2 |
| H ₂ O LINE EMISSION FROM SHOCKED GAS | <i>David A. Neufeld and Gary J. Melnick</i> | 266 140-F12 |
| RADIO RECOMBINATION LINES FROM FAST SHOCKS IN MOLECULAR CLOUDS, WITH APPLICATION TO BIPOLAR FLOWS | <i>Christopher F. McKee and David J. Hollenbach</i> | 275 140-G7 |
| A POSSIBLE SEMISECULAR VARIATION IN ORBITAL PERIOD OF BINARY PULSAR SYSTEM PSR 1913+16 AND LORENTZ INVARIANCE OF GRAVITY | <i>K. Nordtvedt, Jr.</i> | 288 141-A6 |
| AXION BREMSSTRAHLUNG IN DENSE STARS | <i>Masayuki Nakagawa, Yasuharu Kohyama, and Naoki Itoh</i> | 291 141-A9 |
| AN UPPER LIMIT TO THE SPACE DENSITY OF SHORT-PERIOD, NONINTERACTING BINARY WHITE DWARFS | <i>Edward L. Robinson and Allen W. Shafter</i> | 296 141-B1 |
| SELECTIVE MASS LOSS, ABUNDANCE ANOMALIES, AND HELIUM-RICH STARS | <i>G. Michaud, J. Dupuis, G. Fontaine, and T. Montmerle</i> | 302 141-B7 |
| DETERMINATION OF PHOTOSPHERIC HELIUM ABUNDANCES FOR THE HOT WHITE DWARFS LB 1663 AND CD -38°10980 FROM EXOSAT SOFT X-RAY PHOTOMETRY | <i>F. B. S. Paerels, J. Heise, S. M. Kahn, and R. D. Rogers</i> | 315 141-C6 |
| X-RAY IRRADIATED ACCRETION DISKS AND BIMODAL STATES | <i>H. Inoue and R. Hoshi</i> | 320 141-C11 |
| THE HIGH-ENERGY X-RAY SPECTRUM OF BLACK HOLE CANDIDATE GX 339-4 DURING A TRANSITION | <i>J. F. Dolan, C. J. Crannell, B. R. Dennis, and L. E. Orwig</i> | 324 141-D1 |
| THE SPECTRA OF ACCRETION DISKS AND THEIR APPLICATION TO LOW-MASS X-RAY BINARIES | <i>Ronald E. Taam and P. Mészáros</i> | 329 141-D6 |
| SEARCH FOR X-RAY EMISSION FROM THE RADIO LOBES OF SCORPIUS X-1 | <i>Barry Geldzahler and Paul Hertz</i> | 342 141-E5 |
| DIFFUSE EINSTEIN X-RAY EMISSION FROM THE REGION OF RCW 49, A BRIGHT SOUTHERN EMISSION NEBULA | <i>A. Goldwurm, P. A. Caraveo, and G. F. Bignami</i> | 349 141-E12 |
| A FLARE EVENT ON THE LONG-PERIOD RS CANUM VENATICORUM SYSTEM IM PEGASI | <i>Derek L. Buzasi, Lawrence W. Ramsey, and David P. Huenemoerder</i> | 353 141-F8 |
| AN ANALYSIS OF THE PHOTOSPHERIC LINE PROFILES IN F, G, AND K SUPERGIANTS | <i>David F. Gray and C. G. Toner</i> | 360 141-G1 |
| SINGLE GAUSSIAN CURVE OF GROWTH ABUNDANCE DETERMINATIONS FROM ULTRAVIOLET INTERSTELLAR ABSORPTION-LINE DATA | <i>A. W. Harris</i> | 368 141-G9 |
| CARBON GRAINS IN THE ENVELOPE OF IRC +10216 | <i>P. G. Martin and C. Rogers</i> | 374 142-A1 |
| HIGH SPECTRAL RESOLUTION INFRARED OBSERVATIONS OF V1057 CYGNI | <i>L. Hartmann and S. J. Kenyon</i> | 393 142-B6 |
| PREDICTED [Ni II] INFRARED LINE STRENGTHS IN THE CRAB NEBULA AND IC 443 | <i>Richard B. C. Henry</i> | 399 142-B12 |
| NEAR-INFRARED H ₂ EMISSION FROM HERBIG-HARO OBJECTS. I. A SURVEY OF LOW-EXCITATION OBJECTS | <i>Richard D. Schwartz, Martin Cohen, and Peredur M. Williams</i> | 403 142-C2 |
| FLUORESCENT EXCITATION OF INTERSTELLAR H ₂ | <i>John H. Black and Ewine F. van Dishoeck</i> | 412 142-C11 |
| RADIO OBSERVATIONS OF CARBON MONOXIDE TOWARD ZETA OPHIUCHI: VELOCITY STRUCTURE, ISOTOPIC ABUNDANCES, AND PHYSICAL PROPERTIES | <i>William D. Langer, Alfred E. Glassgold, and Robert W. Wilson</i> | 450 142-G9 |
| EVOLUTION OF THE AXIAL ELECTRON CYCLOTRON MASER INSTABILITY, WITH APPLICATIONS TO SOLAR MICROWAVE SPIKES | <i>Loukas Vlahos and Phillip Sprangle</i> | 463 143-A10 |
| STOKES PROFILE ANALYSIS AND VECTOR MAGNETIC FIELDS. I. INVERSION OF PHOTOSPHERIC LINES | <i>A. Skumanich and B. W. Lites</i> | 473 143-B8 |
| THE POLARIZATION PROPERTIES OF MODEL SUNSPOTS: THE BROAD-BAND POLARIZATION SIGNATURE OF THE SCHLÜTER-TEMESVARY REPRESENTATION | <i>A. Skumanich and B. W. Lites</i> | 483 143-C4 |
| HEATING OF CORONAL LOOPS BY PHASE-MIXED SHEAR ALFVÉN WAVES | <i>Toufik E. Abdelatif</i> | 494 143-D1 |
| ENERGY BUILDUP IN CORONAL MAGNETIC FLUX TUBES | <i>R. S. Steinolfson and T. Tajima</i> | 503 143-D10 |
| PROPERTIES OF SOLAR CORONAL ACTIVE REGIONS DEDUCED FROM X-RAY LINE SPECTRA | <i>D. L. McKenzie</i> | 512 143-E5 |
| SIMULATIONS OF THE Ca XIX SPECTRAL EMISSION FROM A FLARING SOLAR CORONAL LOOP. I. THERMAL CASE | <i>E. Antonucci, M. A. Doderio, G. Peres, S. Serio, and R. Rosner</i> | 522 143-F1 |

CONTENTS

v

| | Page | Fiche |
|---|------|---------|
| GROUND-BASED CONSTRAINTS ON THE H_2O^+/CO^+ ABUNDANCE RATIO AND DUST IMPACT RATE IN COMET P/GIACOBINI-ZINNER: COMPARISON WITH THE ICE SPACECRAFT RESULTS <i>R. Mark Wagner, Barry L. Lutz, and S. Wyckoff</i> | 544 | 143-G9 |
| OBSERVATION OF THE OH 1667 MHz LINE TOWARD COMET HALLEY FROM THE SOUTHERN HEMISPHERE <i>E. Bajaja, R. Morras, W. G. L. Pöppel, J. C. Cersosimo, M. C. Martín, J. Mazzaro, J. C. Olalde, A. Silva, M. E. Arnal, F. R. Colomb, I. F. Mirabel, and V. Boriakoff</i> | 549 | 144-A1 |
| CLOUD CHEMISTRY ON JUPITER <i>Barbara E. Carlson, Michael J. Prather, and William B. Rossow</i> | 559 | 144-A11 |
| ABSOLUTE OSCILLATOR STRENGTHS FOR 108 LINES OF Si I BETWEEN 163 AND 410 NANOMETERS <i>Peter L. Smith, M. C. E. Huber, G. P. Tozzi, H. E. Griesinger, B. L. Cardon, and G. G. Lombardi</i> | 573 | 144-B12 |
| ERRATUM | | |
| NEUTRINO-PAIR BREMSSTRAHLUNG IN DENSE STARS. IV. PHONON CONTRIBUTIONS IN THE CRYSTALLINE LATTICE PHASE <i>Naoki Itoh, Yasuharu Kohyama, Noriyoshi Matsumoto, and Midori Seki</i> | 584 | 144-C9 |
| INSTRUCTIONS TO AUTHORS | i | 144-C10 |

1987 NOVEMBER 15, Number 2

| | | |
|--|-----|---------|
| THE APPEARANCE OF PRIMEVAL GALAXIES <i>E. Baron and Simon D. M. White</i> | 585 | 146-C1 |
| REIONIZATION AND SMALL-SCALE FLUCTUATIONS IN THE MICROWAVE BACKGROUND <i>Ethan T. Vishniac</i> | 597 | 146-C13 |
| PROPERTIES OF DENSE GALAXY GROUPS AND THE IMPLICATIONS OF THEIR EXISTENCE <i>Jack W. Sulentic</i> | 605 | 146-D7 |
| AXISYMMETRIC SHELL MODELS WITH STÄCKEL POTENTIALS <i>Jeffrey L. Bishop</i> | 618 | 146-E7 |
| A CENTRAL BLACK HOLE IN M32 <i>John L. Tonry</i> | 632 | 146-F7 |
| SYNCHROTRON EMISSION FROM SHOCK WAVES IN ACTIVE GALACTIC NUCLEI <i>P. L. Biermann and P. A. Strittmatter</i> | 643 | 146-G5 |
| INVERSE COMPTON SCATTERING OF AMBIENT RADIATION BY A COLD RELATIVISTIC JET: A SOURCE OF BEAMED, POLARIZED CONTINUUM IN BLAZARS? <i>Mitchell C. Begelman and Marek Sikora</i> | 650 | 146-G12 |
| X-RAY AND OPTICAL OBSERVATIONS OF X-RAY-SELECTED BL LACERTAE OBJECTS <i>P. Giommi, P. Barr, B. Garilli, I. M. Gioia, T. Maccacaro, D. Maccagni, and R. E. Schild</i> | 662 | 147-A10 |
| A RADIO SEARCH FOR CRAB-LIKE NEBULAE IN M33 <i>Stephen P. Reynolds and John D. Fix</i> | 673 | 147-B7 |
| THE CO CONTENTS OF DWARF IRREGULAR GALAXIES <i>Linda J. Tacconi and Judith S. Young</i> | 681 | 147-C1 |
| OH MEGAMASERS IN HIGH-LUMINOSITY IRAS GALAXIES <i>I. F. Mirabel and D. B. Sanders</i> | 688 | 147-C8 |
| ON STABLE HYDROSTATIC EQUILIBRIUM CONFIGURATIONS OF THE GALAXY AND IMPLICATIONS FOR ITS HALO <i>J. B. G. M. Bloemen</i> | 694 | 147-D1 |
| A COMPOSITE CO SURVEY OF THE ENTIRE MILKY WAY <i>T. M. Dame, H. Ungerechts, R. S. Cohen, E. J. de Geus, I. A. Grenier, J. May, D. C. Murphy, L.-Å. Nyman, and P. Thaddeus</i> | 706 | 147-D13 |
| THE LINEAR FILAMENTS OF THE RADIO ARC NEAR THE GALACTIC CENTER <i>Farhad Yusef-Zadeh and Mark Morris</i> | 721 | 147-F7 |
| PG 1411+442: THE NEAREST BROAD ABSORPTION LINE QUASAR <i>Matthew A. Malkan, Richard F. Green, and John B. Hutchings</i> | 729 | 147-G6 |
| AN ABSORPTION-LINE SURVEY OF 32 QSOs AT RED WAVELENGTHS: PROPERTIES OF THE Mg II ABSORBERS <i>Kenneth M. Lanzetta, David A. Turnshek, and Arthur M. Wolfe</i> | 739 | 148-A2 |
| PROPERTIES OF EVOLVED MASS-LOSING STARS IN THE MILKY WAY AND VARIATIONS IN THE INTERSTELLAR DUST COMPOSITION <i>Harley A. Thronson, Jr., William B. Latter, John H. Black, John Bally, and Perry Hacking</i> | 770 | 148-C5 |
| THE CRUCIAL ROLE OF COOLING IN THE MAKING OF MOLECULAR CLOUDS AND STARS <i>Joel E. Tohline, Peter H. Bodenheimer, and Dimitris M. Christodoulou</i> | 787 | 148-D9 |
| RESONANT NEUTRINO OSCILLATIONS AND STELLAR COLLAPSE <i>G. M. Fuller, R. W. Mayle, J. R. Wilson, and D. N. Schramm</i> | 795 | 148-E3 |
| PARTIAL REDISTRIBUTION IN HIGH-DENSITY, HIGHLY IONIZED PLASMAS <i>B. Talin, R. Stamm, V. P. Kafandjian, and Lewis Klein</i> | 804 | 148-E12 |
| THE INFRARED DIAGNOSTIC OF A DUSTY PLASMA WITH APPLICATIONS TO SUPERNOVA REMNANTS <i>Eli Dwek</i> | 812 | 148-F6 |
| A PULSAR EMISSION MODEL: OBSERVATIONAL TESTS <i>F. Curtis Michel</i> | 822 | 148-G2 |

| | Page | Fiche |
|---|------|---------|
| THE EFFECT OF DECAY OF THE AMPLITUDE OF OSCILLATION ON RANDOM PROCESS MODELS FOR QPO X-RAY STARS <i>N. Shibasaki, R. F. Elsner, and M. C. Weisskopf</i> | 831 | 149-A1 |
| CONSTRAINTS ON MODELS OF CYGNUS X-3 FROM HIGH-ENERGY GAMMA-RAY ABSORPTION AT SOURCE <i>R. J. Protheroe and Todor Stanev</i> | 838 | 149-A8 |
| THE EVOLUTIONARY STATUS OF 4U 1820-30 <i>S. Rappaport, L. A. Nelson, C. P. Ma, and P. C. Joss</i> | 842 | 149-A12 |
| GRAVITATIONAL REDSHIFT AND MASS-RADIUS RELATION IN WHITE DWARFS <i>D. Koester</i> | 852 | 149-B8 |
| ON SYNCHRONIZATION IN EARLY-TYPE BINARIES <i>Jean-Louis Tassoul</i> | 856 | 149-B12 |
| NONLINEAR MAGNETOHYDRODYNAMIC WAVES IN A STEADY ZONAL CIRCULATION FOR A SHALLOW FLUID SHELL ON THE SURFACE OF A ROTATING SPHERE <i>Y. Q. Lou</i> | 862 | 149-C4 |
| POLARIZATION VARIABILITY AMONG WOLF-RAYET STARS. I. LINEAR POLARIZATION OF A COMPLETE SAMPLE OF SOUTHERN GALACTIC WC STARS <i>Nicole St-Louis, Laurent Drissen, Anthony F. J. Moffat, Pierre Bastien, and Santiago Tapia</i> | 870 | 149-C13 |
| POLARIZATION VARIABILITY AMONG WOLF-RAYET STARS. II. LINEAR POLARIZATION OF A COMPLETE SAMPLE OF SOUTHERN GALACTIC WN STARS <i>Laurent Drissen, Nicole St-Louis, Anthony F. J. Moffat, and Pierre Bastien</i> | 888 | 149-E5 |
| THE DISCOVERY OF NONTHERMAL RADIO EMISSION FROM MAGNETIC Bp-AP STARS <i>Stephen A. Drake, David C. Abbott, T. S. Bastian, J. H. Bieging, E. Churchwell, G. Dulk, and Jeffrey L. Linsky</i> | 902 | 149-F10 |
| VLA AND LOW-FREQUENCY VLBI OBSERVATIONS OF THE RADIO SOURCE 0503+467: AUSTERE CONSTRAINTS ON INTERSTELLAR SCATTERING IN TWO MEDIA <i>Steven R. Spangler, Alan L. Fey, and James M. Cordes</i> | 909 | 149-G3 |
| EINSTEIN IPC IMAGING AND SPECTRAL OBSERVATIONS OF THE SUPERNOVA REMNANT HB 9 <i>D. A. Leahy</i> | 917 | 150-A1 |
| THE IONIZATION STRUCTURE OF PLANETARY NEBULAE. VII. NEW OBSERVATIONS OF THE RING NEBULA <i>Timothy Barker</i> | 922 | 150-A6 |
| THE "ALTERNATIVE X" QUESTION: WHAT CAUSES THE STRONG MOLECULAR BANDS AND DAMPING LINES IN VERY STRONG LINED (SUPER-METAL-RICH) STARS? <i>Benjamin J. Taylor and Scott B. Johnson</i> | 930 | 150-B2 |
| ULTRAVIOLET INTERSTELLAR EXTINCTION TOWARD NGC 6530 AND THE INTRINSIC ENERGY DISTRIBUTION OF 9 SAGITTARI AND HD 165052 <i>Ana V. Torres</i> | 949 | 150-C7 |
| THE INTERSTELLAR CLOUDS TOWARD 3C 154 AND 3C 353 <i>S. R. Federman, Neal J. Evans II, R. F. Willson, E. Falgarone, F. Combes, and B. M. Scheufele</i> | 960 | 150-D4 |
| SPECTRAL FLUX FROM LOW-DENSITY PHOTOSPHERES: LOW-TEMPERATURE RESULTS <i>Stephen Hershkowitz and Robert V. Wagoner</i> | 967 | 150-D11 |
| EFFECT OF BALMER CONTINUUM ABSORPTION ON LINE EMISSION FROM Be STARS <i>Krishna M. V. Apparao and S. P. Tarafdar</i> | 976 | 150-E7 |
| COSMIC-RAY ELEMENTAL ABUNDANCES FROM 1 TO 10 GeV PER AMU FOR BORON THROUGH NICKEL <i>Robert Dwyer and Peter Meyer</i> | 981 | 150-E12 |
| OH AND CH CONTINUOUS OPACITY IN SOLAR AND STELLAR ATMOSPHERES <i>Robert L. Kurucz, Ewine F. van Dishoeck, and S. P. Tarafdar</i> | 992 | 150-F13 |
| IMPULSIVE H α DIAGNOSTICS OF ELECTRON-BEAM-HEATED SOLAR FLARE MODEL CHROMOSPHERES <i>Richard C. Canfield and Kenneth G. Gayley</i> | 999 | 150-G10 |
| THE DIRECTIVITY OF HIGH-ENERGY EMISSION FROM SOLAR FLARES: SOLAR MAXIMUM MISSION OBSERVATIONS <i>W. Thomas Vestrand, D. J. Forrest, E. L. Chupp, E. Rieger, and G. H. Share</i> | 1010 | 151-A7 |
| X-RAY OBSERVATIONS OF SOLAR FLARES WITH THE EINSTEIN OBSERVATORY <i>J. H. M. M. Schmitt, F. R. Harnden, Jr., and H. Fink</i> | 1023 | 151-B6 |
| SIMULTANEOUS SMM FLAT CRYSTAL SPECTROMETER AND VERY LARGE ARRAY OBSERVATIONS OF SOLAR ACTIVE REGIONS <i>Kenneth R. Lang, Robert F. Willson, Kermit L. Smith, and Keith T. Strong</i> | 1035 | 151-C4 |
| SOLAR ACTIVE REGION PHYSICAL PARAMETERS INFERRED FROM A THERMAL CYCLOTRON LINE AND SOFT X-RAY SPECTRAL LINES <i>Kenneth R. Lang, Robert F. Willson, Kermit L. Smith, and Keith T. Strong</i> | 1044 | 151-D3 |
| A MULTISPACECRAFT STUDY OF THE INJECTION AND TRANSPORT OF SOLAR ENERGETIC PARTICLES <i>J. Beeck, G. M. Mason, D. C. Hamilton, G. Wibberenz, H. Kunow, D. Hovestadt, and B. Klecker</i> | 1052 | 151-D14 |
| ANNOUNCEMENT: AVAILABILITY OF A CURRENT INDEX TO THE ASTROPHYSICAL JOURNAL AND THE ASTRONOMICAL JOURNAL | 1073 | 151-F11 |

CONTENTS

vii

| | Page | Fiche |
|--|------------|---------|
| ERRATA | | |
| CHEMICAL ENRICHMENT OF HALO PROTOCLUSTERS WITH DIFFERING STELLAR MASS FUNCTIONS <i>Graeme H. Smith and Robert D. McClure</i> | 1074 | 151-F12 |
| THE M31 GLOBULAR CLUSTER SYSTEM <i>D. Crampton, A. P. Cowley, D. Schade, and P. Chayer</i> | 1074 | 151-F12 |
| ABSTRACTS OF THE ASTROPHYSICAL JOURNAL SUPPLEMENT SERIES, 1987 DECEMBER ISSUE | | |
| A 1.49 GHz ATLAS OF SPIRAL GALAXIES WITH $B_T \leq +12$ AND $\delta \geq -45^\circ$ <i>J. J. Condon</i> | 1075 | 151-G1 |
| A 1.49 GHz SUPPLEMENTARY ATLAS OF SPIRAL GALAXIES WITH H -MAGNITUDES <i>J. J. Condon, Q. F. Yin, and David Burstein</i> | 1075 | 151-G1 |
| SYSTEMATIC PROPERTIES OF CO EMISSION FROM GALAXIES. I. LUMINOSITY FUNCTION <i>Frances Verter</i> | 1075 | 151-G1 |
| THE EARLY A TYPE STARS: REFINED MK CLASSIFICATION, CONFRONTATION WITH STRÖMGREN PHOTOMETRY, AND THE EFFECTS OF ROTATION <i>R. O. Gray and R. F. Garrison</i> | 1076 | 151-G2 |
| A CATALOG OF SPECTROSCOPICALLY IDENTIFIED WHITE DWARFS <i>George P. McCook and Edward M. Sion</i> | 1076 | 151-G2 |
| RECURRENT EPISODIC MASS LOSS IN A B2e STAR: 66 OPHIUCHI, 1982-1985 <i>C. A. Grady, George Sonneborn, Chi-Chao Wu, and H. F. Henrichs</i> | 1077 | 151-G3 |
| THE ULTRAVIOLET SPECTRUM OF BETA LYRAE <i>Paolo A. Mazzali</i> | 1077 | 151-G3 |
| THE NEAR-INFRARED SPECTRUM OF THE FeH MOLECULE <i>John G. Phillips, Sumner P. Davis, Bo Lindgren, and Walter J. Balfour</i> | 1077 | 151-G3 |
| INDEX TO VOLUME 322, PARTS 1 AND 2 | See Part 2 | |